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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/802,853

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Shoji Kodama

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EXAMINER

LEWIS, ALICIA M

ART UNIT

PAPER NUMBER

2164

DATE MAILED: 05/02/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/802,853

Applicant(s)

KODAMA, SHOJI

Examiner

Alicia M. Lewis

Art Unit

2164

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 18 March 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-35 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-7 and 9-35 is/are rejected.
- 7) ☒ Claim(s) 8 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 18 March 2004 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.


SAM RIMELL
PRIMARY EXAMINER

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Information Disclosure Statement

1. The information disclosure statement (IDS) submitted on December 22, 2005 is in compliance with the provisions of 37 CFR 1.97. Accordingly, the information disclosure statement is being considered by the examiner.

Drawings

2. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(4) because reference character "113" has been used to designate both free volume pool and NAS gateway. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

3. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they do not include the following reference sign(s) mentioned in the description: element 115 in Figure 20. Corrected drawing sheets in compliance with 37

CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

4. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference character(s) not mentioned in the description: element 109a. Corrected drawing sheets in compliance with 37 CFR 1.121(d), or amendment to the specification to add the reference character(s) in the description in compliance with 37 CFR 1.121(b) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

5. The drawings are objected to because some figure numbers are covered by the figures (i.e. 1603 in Figure 16). The drawings are also objected to because the

numbering is inconsistent; some figures have a leading '0' and others do not. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Objections

6. Claim 8 is objected to as being in improper form because it is dependent upon itself. Accordingly, the claim has not been further treated on the merits.

Claim Rejections - 35 USC § 112

7. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

8. Claims 2-7 and 14-20 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.
9. The term "appropriate" in claims 2 and 14 is a relative term, which renders the claims indefinite. The term "appropriate sized file system" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention.
10. Claims 3-7 and 15-20 are rejected as being dependent upon claims 2 and 14 respectively, which are rejected under 35 U.S.C 112, second paragraph.

Claim Rejections - 35 USC § 102

11. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

12. Claims 1, 2, 25, 33 and 35 are rejected under 35 U.S.C. 102(b) as being anticipated by Yamamoto (US Patent Application Publication 2002/0152339 A1).

With respect to claim 1, Yamamoto teaches a system for protecting data on a physical volume at the file system level and permitting access to the data at the physical volume level comprising:

- a first interface for file level input/output (I/O) (paragraph 18 lines 1-5);
 - a second interface for block level I/O (paragraph 18 lines 1-4);
 - a plurality of physical volumes upon which logical volumes are represented (paragraph 7 line 2, paragraph 29 lines 27-30, paragraph 43);
 - a first controller which processes file level I/O requests (paragraph 7 lines 4-7 and 13-16); and
 - a second controller which processes block level I/O requests (paragraph 7 lines 4-5 and 13-16),
- wherein said first and second controllers share protection information for said logical and physical volumes (paragraph 7 lines 13-16), and
- wherein archived data is stored from said first interface and protected at the file system level, is accessed from both said first and second interfaces and is protected whichever interface is being used (paragraph 6, paragraph 7 lines 13-16, paragraph 35, paragraph 39).

Although Yamamoto uses the term a controller element, it is clear that there are two separate controller elements being used, one for file level and one for block level. For example, he states in paragraph 7 that the controller elements includes at least a SCSI interface for block type read/write requests and a file system interface for file level

read/write requests. This interpretation is upheld throughout this office action wherever Yamamoto is used as a reference.

With respect to claim 2, Yamamoto teaches wherein the plurality of physical volumes permits and appropriate sized file system to be created to store archived data (paragraph 44).

With respect to claim 25, Yamamoto teaches a storage system for protecting data on a physical volume at the file system level and permitting access to the data at the physical volume level comprising:

- a first interface for file level input/output (I/O) (paragraph 18 lines 1-5);
 - a second interface for block level I/O (paragraph 18 lines 1-4);
 - a plurality of physical volumes upon which logical volumes are represented (paragraph 7 line 2, paragraph 29 lines 27-30, paragraph 43);
 - a first controller which processes file level I/O requests (paragraph 7 lines 4-7 and 13-16); and
 - a second controller which processes block level I/O requests (paragraph 7 lines 4-5 and 13-16),
- wherein said first controller changes protection information for said logical and physical volumes to protect data (paragraph 7 lines 13-16, paragraph 28),
- wherein the volume storing the protected data is protected from access from said second controller in accordance with the protection information (paragraphs 35 and 47).

With respect to claim 33, Yamamoto teaches a storage system for handling input/output (I/O) requests from a plurality of servers, wherein a first server of the servers sends file I/O requests and a second server of the servers sends block I/O requests, comprising:

a storage media including a plurality of volumes (paragraph 7 lines 1-2), at least one of the volumes stores data of file system (paragraph 8 lines 1-2);

a first controller, to be coupled to the first server, conducting I/O operations in response to the file I/O requests (paragraph 7);

a second controller, coupled to the storage media, to be coupled to the second server, conducting I/O operations in response to the block I/O requests (paragraph 7);
and

wherein at least one volume of the volumes which stores the data of file system is set to be write-protected from the second controller when the first controller received a request from the first server to protect the file system in the storage media (paragraphs 35-39 and 47).

With respect to claim 35, Yamamoto teaches wherein the first controller receives the file I/O requests via a first interface and the second controller receives the block I/O requests via a second interface (paragraphs 7 and 18).

Claim Rejections - 35 USC § 103

13. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

14. Claims 3-7, 26-28 and 34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamamoto (US Patent Application Publication 2002/0152339 A1) in view of Brewer et al. (US Patent 6,336,163 B1) ('Brewer').

With respect to claims 3 and 26, Yamamoto teaches claims 2 and 25, wherein the shared protection information is a volume status table having a plurality of entries which indicate statuses of said logical volumes (paragraph 43).

Yamamoto does not explicitly teach that statuses of physical volumes are included in the table.

Brewer teaches a method and article of manufacture for inserting volumes for import into a virtual tape server (see abstract) in which he teaches a volume status table having a plurality of entries which indicate statuses of said physical and logical volumes (column 6 lines 1-3).

It would have been obvious to a person having ordinary skill in the art at the time the invention was made to have modified Yamamoto by the teaching of Brewer because a volume status table having a plurality of entries which indicate statuses of said physical and logical volumes would enable the tracking of all types of volumes, not just

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logical volumes, which would add functionality to Yamamoto's storage system (Brewer, column 6 lines 1-3).

With respect to claims 4, Yamamoto as modified teaches wherein said entries indicate whether a volume is a logical or physical volume (Brewer, column 6 lines 12-13).

With respect to claim 5 and 27, Yamamoto as modified teaches wherein said entries indicate a first status of each volume defining whether the volume is protected or unprotected (Yamamoto, paragraph 47).

With respect to claims 6 and 28, Yamamoto as modified teaches wherein said entries indicate a second status of each volume defining whether the volume is exported or un-exported (Brewer, column 2 lines 56-60, column 6 lines 24-26).

With respect to claim 7, Yamamoto as modified teaches wherein said entries indicate a third status of each volume defining a retention period for the volume (Brewer, column 6 lines 7-9).

With respect to claim 34, Yamamoto as modified teaches wherein said first and second controllers share protection information (Yamamoto, paragraph 7 lines 13-16) including status of protection (Yamamoto, paragraph 47) and a retention period for each

of the volumes which is set at file system level by the first controller (Brewer, column 6 lines 7-9).

15. Claims 9-12 and 29-32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamamoto (US Patent Application Publication 2002/0152339 A1) in view of Achiwa et al. (US Patent Application Publication 2003/0009438 A1) ('Achiwa').

With respect to claims 9 and 29, Yamamoto teaches claims 1 and 25.

Yamamoto does not teach wherein said first controller is a network attached storage controller which processes file level I/O requests.

Achiwa teaches a method for file level remote copy of a storage device (see abstract) in which he teaches wherein said first controller is a network attached storage controller which processes file level I/O requests (paragraph 38).

It would have been obvious to a person having ordinary skill in the art at the time the invention was made to have modified Yamamoto by the teaching of Achiwa because wherein said first controller is a network attached storage controller which processes file level I/O requests would enable processing of file or directory level access requests (Achiwa, paragraph 8).

With respect to claims 10 and 30, Yamamoto as modified teaches wherein said second controller is a disk controller network attached storage controller which processes block level I/O requests (Achiwa, paragraph 93).

With respect to claims 11 and 31, Yamamoto as modified teaches wherein said first interface is an Ethernet interface which processes file level I/O requests (Achiwa, paragraph 96).

With respect to claims 12 and 32, Yamamoto as modified teaches wherein said second interface is a Fibre Channel interface which processes block level I/O requests (Achiwa, paragraph 93, paragraph 98).

16. Claims 13, 14 and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hoogterp (US Patent Application Publication 2005/0210218 A1) in view of Yamamoto (US Patent Application Publication 2002/0152339 A1).

With respect to claim 13, Hoogterp teaches a system for protecting data on a physical volume at the file system level and permitting access to the data at the physical volume level comprising:

- a network attached storage (NAS) gateway (Figure 4, paragraphs 27 and 52);
 - and
 - a storage system which is connected to said NAS gateway (Figure 4, paragraphs 52 and 55),
- wherein said NAS gateway comprises:
- a first interface for file level I/O (element 168 in Figure 4, paragraph 52);

a third interface for block level I/O (element 169 in Figure 4, paragraphs 52-54), and

a first controller which processes file level I/O requests (paragraph 56);
wherein said storage system comprises:

a second interface for block level I/O, said second interface being
connected to said third interface (paragraph 34),

a plurality of physical volumes upon which logical volumes are
represented (paragraph 62);

a second controller which processes block level I/O requests (paragraph
34),

wherein archived data is stored from said first interface of said NAS gateway to
said second interface via said third interface and protected at the file system level, is
accessed from both said first and second interfaces and is protected whichever
interface is being used (Figure 4, paragraph 55).

Hoogterp does not teach:

wherein said first and second controllers share protection information for said
logical and physical volumes.

Yamamoto teaches a direct access storage system with combined block
interface and file interface access (see abstract), in which he teaches:

a first interface for file level input/output (I/O) (paragraph 18 lines 1-5);

a second interface for block level I/O (paragraph 18 lines 1-4);

a plurality of physical volumes upon which logical volumes are represented (paragraph 7 line 2, paragraph 29 lines 27-30, paragraph 43);

a first controller which processes file level I/O requests (paragraph 7 lines 4-7 and 13-16); and

a second controller which processes block level I/O requests (paragraph 7 lines 4-5 and 13-16),

wherein said first and second controllers share protection information for said logical and physical volumes (paragraph 7 lines 13-16), and

wherein archived data is stored from said first interface and protected at the file system level, is accessed from both said first and second interfaces and is protected whichever interface is being used (paragraph 6, paragraph 7 lines 13-16, paragraph 35, paragraph 39).

It would have been obvious to a person having ordinary skill in the art at the time the invention was made to have modified Hoogterp by the teaching of Yamamoto because wherein said first and second controllers share protection information for said logical and physical volumes would enable a storage system with direct access storage devices that could be shared between a block interface and a file interface (Yamamoto, paragraph 6).

With respect to claim 14, Hoogterp as modified teaches wherein the plurality of physical volumes permits and appropriate sized file system to be created to store archived data (Yamamoto, paragraph 44).

With respect to claim 24, Yamamoto as modified teaches wherein said second interface is a Fibre Channel interface which processes block level I/O requests (Hoogterp, paragraph 34).

17. Claims 15-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hoogterp (US Patent Application Publication 2005/0210218 A1) in view of Yamamoto (US Patent Application Publication 2002/0152339 A1) as applied to claims 13, 14 and 24 above, and further in view of Brewer et al. (US Patent 6,336,163 B1) ('Brewer').

With respect to claim 15, Hoogterp as modified teaches claim 14, wherein the shared protection information is a volume status table having a plurality of entries which indicate statuses of said logical volumes (Yamamoto, paragraph 43).

Hoogterp as modified does not explicitly teach that statuses of physical volumes are included in the table.

Brewer teaches a method and article of manufacture for inserting volumes for import into a virtual tape server (see abstract) in which he teaches a volume status table having a plurality of entries which indicate statuses of said physical and logical volumes (column 6 lines 1-3).

It would have been obvious to a person having ordinary skill in the art at the time the invention was made to have further modified Hoogterp by the teaching of Brewer because a volume status table having a plurality of entries which indicate statuses of said physical and logical volumes would enable the tracking of all types of volumes, not

just logical volumes, which would add functionality to Hoogterp's storage system (Brewer, column 6 lines 1-3).

With respect to claim 16, Hoogterp as further modified teaches wherein said entries indicate whether a volume is a logical or physical volume (Brewer, column 6 lines 12-13).

With respect to claim 17, Hoogterp as further modified teaches wherein said entries indicate a first status of each volume defining whether the volume is protected or unprotected (Yamamoto, paragraph 47).

With respect to claim 18, Hoogterp as further modified teaches wherein said entries indicate a second status of each volume defining whether the volume is exported or un-exported (Brewer, column 2 lines 56-60, column 6 lines 24-26).

With respect to claim 19, Hoogterp as further modified teaches wherein said entries indicate a third status of each volume defining a retention period for the volume (Brewer, column 6 lines 7-9).

With respect to claim 20, Hoogterp as further modified teaches wherein, after the retention period for the volume is expired, data in the volume can be changed by a

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request received at said first controller or said second controller (Hoogterp, paragraph 177).

18. Claims 21-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hoogterp (US Patent Application Publication 2005/0210218 A1) in view of Yamamoto (US Patent Application Publication 2002/0152339 A1) as applied to claims 13, 14 and 24 above, and further in view of Achiwa et al. (US Patent Application Publication 2003/0009438 A1) ('Achiwa').

With respect to claim 21, Hoogterp as modified teaches claim 13.

Hoogterp as modified does not teach wherein said first controller is a network attached storage controller which processes file level I/O requests.

Achiwa teaches a method for file level remote copy of a storage device (see abstract) in which he teaches wherein said first controller is a network attached storage controller which processes file level I/O requests (paragraph 38).

It would have been obvious to a person having ordinary skill in the art at the time the invention was made to have further modified Hoogterp by the teaching of Achiwa because wherein said first controller is a network attached storage controller which processes file level I/O requests would enable processing of file or directory level access requests (Achiwa, paragraph 8).

With respect to claim 22, Hoogterp as further modified teaches wherein said second controller is a disk controller network attached storage controller which processes block level I/O requests (Achiwa, paragraph 93).

With respect to claim 23, Hoogterp as further modified teaches wherein said first interface is an Ethernet interface which processes file level I/O requests (Achiwa, paragraph 96).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Alicia M. Lewis whose telephone number is 571-272-5599. The examiner can normally be reached on Monday - Friday, 9 - 6:30, alternate Friday off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Charles Rones can be reached on 571-272-4085. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Alicia Lewis
April 28, 2006



SAM RIMELL
PRIMARY EXAMINER